

VIII. *The Method, Manner and Order of the Transmutation of Copper into Brass, &c. By Thomas Povey, Esq; Brought into the Royal Soc. of which he is a Fellow.*

WE have in the North parts of *England* much Copper, which places, tho as they now lye, are barren and poor, might be rendered rich and useful, were a sufficient encouragement given to the digging and raising thereof, and the poor thereabout might be put in a good way of livelihood, as well as several other advantages to be brought thereby to the Publick.

Of the manner of digging and preparing the Calamine, see *Philos. Transact.* No. 198.

The *Calamine* is digged out of certain Mines, of which there are several in the West of *England*, (as about *Mendip*, &c.) which lye about 20 Foot deep, as Coals do, thence brought up by Sea. It is burnt or calcined in a Kiln or Oven, made red hot, then grownd to powder, and sifted into the fineness of Flower, then mixt with grownd Charcoal, because the *Calamine* is apt to be clammy and to clod, and not so apt or capable of incorporating; then they put about 7 pound of *Calamine* into a Melting-pot of about a Gallon content, and the Copper uppermost about 5 *l.* the *Calamine* must be mixt with as many Coals as will fill up the pot. This is let down with Tongs into a Wind-furnace, 8 foot deep, and remains eleven hours therein. They cast off not above twice in twenty four hours, one Furnace holds eight Pots. After Melting it is cast into Plates or Lumps.

Forty

Forty five pound of Raw *Calamine* produces 30 *l.* burnt or calcined.

*Brass-Shruff* serves instead of so much *Copper*, but this cannot always be procured in quantities, because it is a collection of pieces of old *Brass*, which is usually procured in small parcels.

The Best *Guns* are not made of Malleable Metal, and cannot be made of pure *Copper* or *Brass*, but it is necessary to put in courser Metals, to make it run closer and sounder ; as *Lead* and *Pot-metal*. *Bell-metal* being *Copper* and *Tin*, and *Pot-metal*, *Copper* and *Lead* : about 20 *l.* of *Lead* is usually put into 100 of *Pot-metal*, but about 6 *l.* is sufficient to put into 100 *l.* of *Gun-Metal*.

The *Calamine-stones* were heretofore fetch'd from *Poland* : But since fetch'd from hence by the *Dutch*.

The *Manufacture* of *Brass* was privately kept in *Germany* for many hundred years, wherein many thousands were employed and well maintained, some having raised themselves to great Estates.

The *Dutch* may not import (an Act of Parliament expressly forbidding them) the *Copper* nor the *Calamine-stone* ; but contrary to the ends, and perhaps the meaning of the said Act, and more to the publick disadvantage, they mingle and manufacture those two Ingredients (which are of foreign growth to them) and by that Evasion import them hither : and the great Manufactures of *Wire*, and several other Commodities arising of those important Materials.